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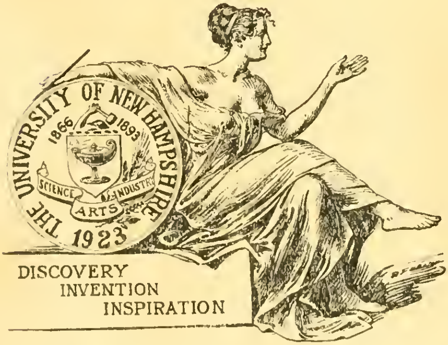

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INSPECTION OF COMMERCIAL FERTILIZERS

MADE FOR THE STATE DEPARTMENT OF AGRICULTURE.

The inspection of commercial fertilizers reported in this bulletin was made under the direction of the Honorable Andrew L. Felker, Commissioner of Agriculture. The state inspector, Mr. Eugene D. Sanborn, collected samples of 103 brands of fertilizer materials which were offered for sale by dealers or had been delivered to consumers between March and June, 1926. The general character of the fertilizer materials collected is shown by the following classification:

Complete fertilizer	81
Ground bone	5
Sheep manure	5
Acid phosphate	4
Nitrate of soda	3
Tankage	2
Poultry manure	1
Muriate of potash	1
Sulphate of ammonia	1
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THE FERTILIZER LAW.

Only eight of the forty-eight states have no laws regulating the manufacture and sale of fertilizers. These states are Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming. None of these states uses commercial fertilizers in large amounts.

The main purposes of the laws of the different states are similar. In general they require periodical registration of brands, accurate and not misleading labelling and a statement of the chemical composition of the fertilizers together with provisions for periodical analysis of brands by State Officials. The laws of many of the states contain clauses providing for the payment by the manufacturers of license fees in one form or another, sufficient to make the enforcement of the law self-supporting. Penalties of various degrees of severity are usually prescribed for violations of the laws. Periodical publications are in many cases required of the State Official in charge of the administration of the fertilizer law.

The New Hampshire Law entitled "An Act to Regulate the Sale of Fertilizers" was first passed in 1901, and last amended in 1917. The law applies to all fertilizer materials offered for sale whether mixed materials in the form of complete fertilizers or unmixed materials as acid phosphate, tankage, sulphate of ammonia, etc. Under the provisions of this law every manufacturer or dealer who shall sell or offer for sale any fertilizer material shall furnish with each lot or package a clearly printed statement certifying the number of net pounds, the brand name under which it is sold, the name and address of the manufacturer and a chemical analysis stating the minimum percentages of nitrogen, of water soluble potash, of total phosphoric acid and of available phosphoric acid. No person shall sell or offer for sale any pulverized leather, hair or wool waste, peat, garbage tankage, or any inert material whatsoever, without an explicit printed statement of the fact conspicuously fixed to every package of such material.

The state official in charge of the administration of the fertilizer law is the Commissioner of Agriculture.

FERTILIZER TONNAGE.

The American Fertilizer Handbook for 1926 gives 7,464,824 tons as the total amount of fertilizer materials manufactured in the United States and imported into the country during the year 1925. The annual consumption in New Hampshire in 1925 is estimated at 16,000 tons. The figure for total production in the United States is probably more accurate than that for consumption in New Hampshire. It is possible to get from manufacturers quite accurate figures of their annual production, but it is not possible to trace all the manufactured material to the locality in which it is used. The general use of higher analysis fertilizers makes tonnage figures misleading even if they were obtainable. The figures of most interest would be those compiled on the basis of the units of each element of plant food, but any attempt to secure reliable figures on this basis would involve an amount of work out of proportion to their value.

CONCENTRATED FERTILIZERS.

Two brands of concentrated fertilizers were collected and analyzed, one having the formula 8-16-20, the other 10-16-14. In recent years commercial methods have been devised for the manufacture of a number of high-grade concentrated nitrogenous materials, both organic and inorganic, as well as concentrated phosphatic materials. Some manufacturers are offering double, triple or multiple-strength fertilizers. The present high freight rates and labor costs both operate to make the use of more concentrated materials economical. Concentrated fertilizers will no doubt be offered on the market in increasing number of brands as the materials become available and the consumer becomes experienced in their use. The change to the use of multiple-strength fertilizers, however, will probably come slowly; for there must be overcome not only the inertia of a large industry based on the manufacture of present percentages but the inertia of a large body of consumers who are accustomed to buying and applying fertilizers of the present grades. The economies involved in the distribution of concentrated fertilizers are so great that a considerable increase in their use seems inevitable. It has been mentioned as an objection to the use of concentrated fertilizers that they may cause injury to the plant. Experiments have been conducted in several experiment stations with concentrated materials both home-mixed and commercially mixed, the results of which show that with proper care in their application they may be used with safety. Consumers are familiar with the use of such concentrated materials as nitrate of soda and have learned how to prevent the burning effects which result from their improper application. There appears, therefore, no reason why concentrated fertilizers may not be profitably and safely used if careful consideration is given to the character of the crop, type of soil, kind of fertilizer and method of application.

NEW ENGLAND STANDARD NINE.

Late in December, 1922, the directors of the New England Agricultural Experiment Stations and the agronomists of the New England State Colleges met in conference with representatives of the fertilizer manufacturers selling in New England and adopted nine grades of fertilizer which in their opinion meet all the fertilizer requirements of New England crops and soils.

The formulas and recommended uses of these nine grades, known as the New England Standard Nine, are as follows:

1. 0-12-6—For late fall seeding of grass and grain and for top-dressing clover and alfalfa.
2. 2-12-4—For late summer and early fall seeding of grass or grain; also for corn with the addition of manure.
3. 3-10-4—For corn, small grains, millet, tomatoes and cabbage on the heavier soils.
4. 3-10-6—For corn, beans and peas on the lighter soils.

5. 4- 8 -4—For potatoes, beets, carrots, onions and other root crops on the heavier soils.
6. 4- 8 -6—For potatoes and other root crops on loams.
7. 5- 4 -5—For tobacco.
8. 5- 8 -7—For potatoes, celery and other truck crops on light soils.
9. 8- 6 -6—For top-dressing hay and pasture land.

One object of this conference was to decrease the needlessly large number of different grades on the market. Had the recommendations made been accepted by the consumers of fertilizer materials in New Hampshire the 81 complete fertilizers analyzed in this year's inspection would have been comprised of 9 grades. Instead, there are 25 grades. This number might be reduced to 23 by omitting two grades, 8-16-20 and 10-16-14 which are double strength respectively of the grades 4-8-10 and 5-8-7. These 25 grades include only 5 of the New England Standard Nine. Four grades of the New England Standard Nine were not found offered for sale.

Not including the double strength grade equivalent to 5-8-7 there were 6 grades representing 15 brands containing more potash than the agronomists of New England consider is necessary or profitable to use. No grade in the New England Standard Nine contains more than 7 per cent potash. Six grades, representing 15 brands, were guaranteed to contain 10 per cent potash. In Table I are given the grades of complete fertilizers collected, the number of brands found in each grade, the average analysis of each grade and the average retail price per ton.

TABLE No. I.

Formula	Number of brands	Average per cent Nitrogen	Average per cent total phosphoric acid	Average per cent available phosphoric acid	Average per cent water soluble potash	Average retail price per ton
1–9–4	3	0.81	9.97	9.59	4.09	$47.13
1–10–3	1	0.88	12.40	10.11	3.05	50.00
2–8–2	8	1.70	9.59	8.51	2.21	42.25
2–8–10	1	1.68	9.03	8.62	10.00	50.00
2–9–3	4	1.61	10.04	9.51	3.07	46.00
2–10–3	1	2.47	16.68	11.10	4.11	40.00
2–10–4	1	1.92	11.42	10.21	4.25	52.00
2–12–4	3	1.67	13.30	12.47	4.16	47.67
3–8–4	8	2.47	9.33	8.49	4.06	47.13
3–8–10	1	2.46	9.00	8.11	10.00	53.00
3–10–4	1	2.63	11.99	11.48	4.04	50.00
3–10–6	1	2.37	10.50	10.10	5.89	50.20
3–12–3	2	2.54	13.28	12.56	3.18	41.60
4–6–10	9	3.33	7.46	6.58	10.10	53.11
4–8–4	10	3.32	9.43	8.60	4.13	51.30
4–8–7	5	3.40	10.36	8.77	7.07	53.20
4–8–10	3	3.41	9.53	8.91	9.74	51.33
4–16–4	1	3.29	17.00	16.55	4.18	53.00
5–8–7	8	4.08	9.31	8.55	6.94	53.23
5–10–5	1	3.60	10.52	9.75	6.60	49.00
6–6–4	1	4.95	7.96	6.55	4.21	80.00
7–6–5	5	5.59	7.52	6.84	4.87	67.00
8–16–20	1	5.60	13.62	13.05	19.53	77.00
10–3–8	1	8.29	9.30	6.23	8.00	72.00
10–16–14	1	8.22	20.12	18.91	14.62	100.00

TRADE VALUES.

The following trade values are approximately wholesale prices for the first half of the year 1926. In the main they represent cash prices per ton f. o. b. for raw materials of good quality used in the manufacture of fertilizers.

NITROGEN.	Price per Pound	Price per Unit
In sulphate of ammonia	$0.14	$2.80
In nitrate of soda	.16	3.20
Organic, in fish, blood, meat	.26	5.20
Organic, in fine bone, tankage	.25	5.00
Organic, in coarse bone, tankage, sheep manure, hoof meal	.21	4.20
Organic, in mixed fertilizer	.25	5.00
Organic, in cottonseed meal, castor pomace, etc.	.26	5.20

PHOSPHORIC ACID		
Soluble in water	.050	1.00
Reverted	.045	0.90
In fine bone and tankage, fish	.040	0.80
In coarse bone and tankage, sheep manure	.030	0.60
In cottonseed meal, castor pomace, etc.	.030	0.60
Insoluble in mixed fertilizers	.015	0.30
POTASH		
As sulphate	.045	0.90
As muriate	.040	0.80
In sheep manure, organic vegetable compounds, total in wood ashes	.030	0.60

These values are not intended to represent retail prices to the consumer as they do not include such items of expense in manufacture as mixing, bagging, freight, commissions, overhead, etc. They are useful, however, in comparing the commercial value guaranteed for any particular brand with the value calculated from the analysis. They are also useful in calculations to determine the grades of fertilizer in which the consumer purchases the most plant food per dollar.

RETAIL PRICE DIFFERENCES.

The table which follows gives the minimum, maximum and average retail prices per ton of the formulas which are represented in this year's inspection by two or more brands.

Formula	Number of Brands	Minimum price per ton	Maximum price per ton	Average price per ton
1–9–4	3	$44.00	$50.00	$47.13
2–8–2	8	35.00	50.00	42.25
2–9–3	4	42.00	52.00	46.00
2–12–4	3	45.00	52.00	47.67
3–8–4	8	40.00	56.00	47.13
3–12–3	2	38.20	45.00	41.60
4–6–10	9	48.00	57.00	53.11
4–8–4	10	40.00	70.00	51.30
4–8–7	5	50.00	56.00	53.20
4–8–10	3	44.00	60.00	51.33
5–8–7	8	44.80	75.00	53.23
7–6–5	5	60.00	78.00	67.00

The wide differences between maximum and minimum prices are not due to the difference in freight rates to different points. In many instances the extremes were found in nearby localities.

DEFICIENCIES.

Twenty-six of the 103 samples analyzed were found to contain less than the guaranteed amount of one or more of the three constituents. Seven were deficient in nitrogen only, four in phosporic acid only and one in potash only; two were deficient in both nitrogen and phosphoric acid, ten in both nitrogen and potash and one in all three constituents, making the total number of deficiencies forty. Twenty-nine of these deficiencies were two-tenths of one per cent or more.

NITROGEN DEFICIENCIES.

Three brands of nitrate of soda and one brand of sulphate of ammonia were analyzed. These four brands fully met their guarantee. Five brands, four of acid phosphate and one of muriate of potash, contain no nitrogen. The remaining ninety-two brands were guaranteed to contain nitrogen in amounts varying from 0.82 per cent to 8.22 per cent. Twenty-one of these, more than twenty per cent, failed to meet the guarantee in full. Four were below the guarantee by less than one-tenth per cent. Seven were below by more than one-tenth per cent and less than two-tenths per cent. Five were below by more than two-tenths per cent and less than three-tenths per cent. Two were below by more than three-tenths per cent and less than four-tenths per cent. One failed to meet its guarantee by one-half per cent, one by eighty-six hundredths per cent and one by within two hundredths of a full per cent. Since nitrogen is the most costly constituent of mixed fertilizers, any deficiency in this element considerably decreases the value in dollars per ton to the consumer. The value of the amount of nitrogen represented by the greatest deficiency above is approximately five dollars per ton. The following table shows this year's nitrogen deficiencies compared with those of recent years.

SUMMARY OF NITROGEN DEFICIENCIES FOR THE PAST TEN YEARS.

Year	Less than one-tenth per cent	Between one-tenth and two-tenths per cent	Between two-tenths and three-tenths per cent	Between three-tenths and four-tenths per cent	Between four-tenths and five-tenths per cent	Between five-tenths and six tenths per cent	Between six-tenths and seven-tenths per cent	Between seven-tenths and eight-tenths per cent	Between eight-tenths and nine-tenths per cent	Between nine-tenths and one per cent	Total number of brands	Number deficient	Per cent deficient
1926	4	7	5	2	0	1	0	0	1	1	103	21	20
1925	3	4	3	0	0	0	1	2	0	1	113	14	12
1924	7	13	6	0	1	0	0	0	0	2	115	29	25
1923	1	5	2	1	0	0	0	0	0	0	101	9	9
1922	2	6	2	2	1	0	0	0	0	0	97	13	13
1921	2	7	6	4	0	0	0	0	0	0	104	19	18
1920	5	10	9	3	1	2	0	0	0	0	100	30	30
1919	4	2	1	0	0	0	0	0	0	0	110	7	6
1918	10	6	5	5	1	3	1	2	1	0	147	34	23
1917	3	4	1	0	0	1	0	0	0	0	165	9	5

PHOSPHORIC ACID DEFICIENCIES.

Four brands of sixteen per cent acid phosphate were analyzed and found to meet the guarantee. Of ninety-four other brands guaranteed to contain phosphoric acid, eight failed to meet the guarantee in full, four of them failing by less than one-fourth per cent. Five brands were below in available phosphoric acid, and four below in total phosphoric acid. Only one brand was below guarantee in both total and available phosphoric acid. A deficiency of one per cent in available phosphoric acid is equivalent to about one dollar per ton.

POTASH DEFICIENCIES.

One brand of muriate of potash was analyzed and found to meet its guarantee. Of eighty-seven other brands guaranteed to contain potash in amounts varying from 1.30 per cent to 20.00 per cent, twelve failed to meet the guarantee in full. Three brands were deficient by less than one-fourth per cent. Four were deficient by more than one-fourth per cent but less than one-half per cent. Four were deficient by more than one-half per cent but less than three-fourths per cent. One was deficient by nearly a full per cent. A potash deficiency of one per cent represents a deficiency of about one dollar per ton.

In the tabulation of the analyses in the following pages deficiencies of two-tenths of one per cent or more are shown in italics. The names of the manufacturers are arranged alphabetically and under the manufacturer the different brands are arranged alphabetically or numerically by formula.

	NITROGEN		PHOSPHORIC ACID				POTASH	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
AMERICAN AGRICULTURAL CHEMICAL CO., New York City.								
16% Acid Phosphate	......	......	16.50	18.86	16.00	18.37	......	......
Aroostook Potato Manure	4.11	4.31	8.50	9.53	8.00	9.06	7.00	7.46
Bowker's All Round Fertilizer	2.47	2.47	9.00	*8.61*	8.00	8.18	4.00	4.00
Bowker's Market Garden Fertilizer	3.29	3.29	8.50	9.15	8.00	8.59	4.00	4.09
Bowker's Potato and Vegetable Phosphate	1.65	1.68	9.50	10.32	9.00	9.58	3.00	3.17
Bowker's Square Brand Corn and Grain Fertilizer	1,65	1.65	8.50	9.49	8.00	8.85	2.00	2.36
Bowker's Sure Crop Fertilizer	0.82	0.99	9.50	9.73	9.00	9.32	4.00	4.06
Bradley's Complete Manure for Potatoes and Vegetables	3.29	3.29	8.50	9.30	8.00	8.93	7.00	7.00
Bradley's Complete Manure with 10% Potash	3.29	3.19	6.50	7.19	6.00	6.88	10.00	*9.72*
Bradley's Corn Phosphate	1.65	1.65	8.50	8.78	8.00	8.00	2.00	2.08
Bradley's Eclipse	0.82	0.82	9.50	10.27	9.00	9.80	4.00	4.19
Bradley's Potato Fertilizer	1.65	1.67	9.50	10.28	9.00	9.51	3.00	3.00
Bradley's Potato Manure	2.47	2.52	8.50	9.24	8.00	8.66	4.00	4.13
Bradley's XL Super-Phosphate of Lime	2.47	2.63	10.50	11.99	10.00	11.48	4.00	4.04
Complete General Fertilizer	2.47	2.40	8.50	9.33	8.00	8.80	4.00	3.84
Corn Favorite	2.47	2.37	10.50	10.50	10.00	10.10	6.00	6.00
Farmers' Friend Fertilizer	1.65	1.73	12.50	13.27	12.00	12.27	4.00	4.32
General Crop Fertilizer	1.65	1.57	9.50	9.78	9.00	9.61	3.00	3.00
Grass and Lawn Top Dressing	4.94	4.95	6.50	7.96	6.00	6.55	4.00	4.21
Hercules Top Dresser	5.76	5.68	6.50	7.61	6.00	6.62	5.00	*4.66*
Lister's Corn and Potato Fertilizer	1.65	1.53	9.50	9.76	9.00	9.32	3.00	3.09
Monarch Fertilizer	3.29	*3.04*	8.50	8.93	8.00	8.30	4.00	*3.78*
Nitrate of Soda	15.22	15.53	......	......	......	......	......	......
Peerless Potato Manure	3.29	*3.09*	8.50	9.22	8.00	8.89	7.00	*6.30*
Prolific 10% Potash Fertilizer	1.65	1.68	8.50	9.03	8.00	8.62	10.00	10.00
Pulverized Sheep Manure	1.44	1.96	0.75	0.97	......	......	2.00	2.31
Special Ground Bone	2.06	2.83	22.88	27.98	......	......	......	......
Stockbridge Early Crop Manure	4.11	*3.80*	8.50	8.98	8.00	8.43	7.00	*6.25*
Stockbridge Potato and Vegetable Manure	3.29	3.29	6.50	6.99	6.00	6.74	10.00	10.00

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Armour Fertilizer Works, Carteret, N. J.								
Armour's 16% Acid Phosphate	......	......	16.50	17.40	16.00	16.46	......	......
Armour's 2-12-4 Fertilizer	1.65	1.67	12.50	13.72	12.00	12.61	4.00	4.00
Armour's 4-16-4 Big Crop Fertilizer	3.29	3.29	16.50	17.00	16.00	16.55	4.00	4.18
Corn Grower Fertilizer	1.65	1.81	8.50	9.39	8.00	8.55	2.00	2.40
Joseph Breck and Sons, Corp. Boston, Mass.								
Pulverized Sheep Manure—Ram's Head Brand	1.46	1.51	0.75	0.75	......	......	3.00	2.43
Consolidated Rendering Co., Boston, Mass.								
Ground Bone	2.46	2.47	22.90	28.77	......	......	......	......
Ground Tankage	7.41	7.41	9.15	13.55	......	......	......	......
High Grade Acid Phosphate	......	......	17.00	19.32	16.00	18.07	......	......
Muriate of Potash	......	......	......	......	......	......	50.00	50.60
Nitrate of Soda	15.22	15.23	......	......	......	......	......	......
Pure Ground Bone	2.00	2.39	26.00	31.12	......	......	......	......
Sulphate of Ammonia	20.50	20.50	......	......	......	......	......	......

JOHN C. DOW CO., Boston, Mass.								
Pure Ground Bone	2.00	2.24	24.00	27.28	10.00	11.58	......	......
EASTERN STATES FARMERS' EXCHANGE, Springfield, Mass.								
Eastern States 3-12-3 Fertilizer	2.46	2.60	12.00	13.00	12.00	12.28	3.00	3.28
Eastern States 4-8-10 Fertilizer	3.29	3.33	8.00	9.74	8.00	8.48	10.00	10.16
Eastern States 5-8-7 Fertilizer	4.11	4.02	8.00	9.13	8.00	8.00	7.00	*6.52*
Eastern States 8-16-20 Fertilizer	6.58	*5.60*	16.00	*13.62*	16.00	*13.05*	20.00	*19.53*
Nitrate of Soda	14.80	15.36	......	......	......	......	......	......
ESSEX FERTILIZER CO., Boston, Mass.								
Essex A1 Superphosphate 2-8-2	1.64	1.64	9.00	9.47	8.00	8.58	2.00	2.12
Essex Complete Manure 5-8-7	4.10	4.16	9.00	9.49	8.00	8.16	7.00	7.00
Essex Fish Fertilizer 3-8-4	2.46	2.51	9.00	9.51	8.00	8.00	4.00	4.22
Essex Market Garden 4-8-4	3.29	3.53	9.00	9.65	8.00	8.57	4.00	4.35
Essex Peerless Potato Manure 4-6-10	3.28	3.56	7.00	7.55	6.00	6.27	10.00	10.44
Essex Top Dressing 7-6-5	5.76	5.76	7.00	7.13	6.00	6.96	5.00	5.00
FARMER'S EXCHANGE, Portland, Me.								
F.-E. 3-12-3	2.45	2.47	12.50	13.55	12.00	12.83	3.00	3.07
F-E. 4-6-10	3.28	3.28	6.50	7.77	6.00	7.03	10.00	10.00
F-E. 4-8-4	3.28	3.28	8.50	9.90	8.00	8.84	4.00	4.16
F-E. 5-8-7	4.10	4.10	8.50	9.51	8.00	9.02	7.00	7.00
F-E. 5-10-5	4.10	*3.60*	10.50	10.52	10.00	*9.75*	5.00	6.60
F-E. 7-6-5	5.74	*4.88*	6.50	9.58	6.00	7.96	5.00	*4.40*
Ground Bone	2.06	3.32	22.00	22.40	......	......	......	......
INTERNATIONAL AGRICULTURAL CORP. Woburn, Mass.								

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
16% Acid Phosphate	......	......	16.50	17.80	16.00	17.17	......	......
Crop Grower 5-8-7	4.12	4.13	8.50	9.38	8.00	8.97	7.00	7.00
Economy 1-9-4	0.82	*0.62*	9.50	9.91	9.00	9.64	4.00	4.02
General Favorite 3-8-4	2.50	2.62	8.50	9.58	8.00	9.18	4.00	4.28
High Grade Manure 4-8-10	3.30	3.15	8.50	9.12	8.00	8.78	10.00	*9.03*
Ideal 4-8-4	3.30	3.32	8.50	9.09	8.00	8.85	4.00	4.13
Multiple Strength Fertilizer 10-16-14	8.22	8.22	17.00	20.12	16.00	18.91	14.00	14.62
New England Special 2-12-4	1.60	1.61	12.50	12.90	12.00	12.52	4.00	4.15
Top Dresser 7-6-5	5.70	5.70	6.50	6.50	6.00	6.00	5.00	5.00
4-6-10 Fertilizer	3.30	3.30	6.50	6.61	6.00	6.44	10.00	10.00
LOWELL FERTILIZER CO., Boston, Mass.								
Lowell Animal Brand 3-8-4	2.46	2.56	9.00	9.32	8.00	8.40	4.00	4.18
Lowell Bone Fertilizer 2-8-2	1.64	1.69	9.00	10.17	8.00	8.90	2.00	2.08
Lowell Corn and Vegetable 4-8-4	3.28	3.54	9.00	9.52	8.00	8.65	4.00	4.43
Lowell Potato Grower 4-6-10	3.28	3.30	7.00	7.30	6.00	6.01	10.00	10.00
Lowell Potato Phosphate 4-8-7	3.28	3.35	9.00	9.41	8.00	8.10	7.00	7.26
Lowell Top Dressing 7-6-5	5.76	5.93	7.00	*6.79*	6.00	6.64	5.00	5.27
MCQUESTEN AND LEWIS, Manchester, N. H.								
McQuesten and Lewis 4-8-10 Fertilizer	4.00	*3.74*	......	9.73	8.00	9.48	10.00	10.03

MAINE FRUIT GROWERS' EXCHANGE, Auburn, Me.								
Katahdin Brand 4-6-10	3.29	3.15	6.50	8.45	6.00	7.04	10.00	10.00
Katahdin Brand 4-8-4	3.29	3.29	8.50	9.66	8.00	8.44	4.00	4.00
MANCHESTER RENDERING CO., Manchester, N. H.								
Manchester Animal Brand 4-8-7	3.20	3.74	14.00	14.52	8.00	9.31	7.00	7.19
Manchester Special Fertilizer	1.64	2.47	14.00	16.68	10.00	11.10	3.00	4.11
Tankage	5.75	6.68	......	16.51	8.00	*6.73*	......	......
MERRIMACK FARMERS' EXCHANGE, INC. Concord, N. H.								
Merrimack 2-8-2	1.64	1.82	9.00	9.41	8.00	8.36	2.00	2.38
Merrimack 3-8-4	2.46	*2.16*	9.00	9.54	8.00	8.66	4.00	*3.78*
Merrimack 4-6-10	3.28	3.49	7.00	7.70	6.00	6.51	10.00	10.54
Merrimack 4-8-4	3.28	3.31	9.00	9.08	8.00	8.45	4.00	4.02
Merrimack 5-8-7	4.10	4.21	9.00	9.11	8.00	8.36	7.00	7.10
NATURAL GUANO CO., Aurora, Ill.								
Pulverized Sheep Manure—Sheeps' Head Brand	2.25	2.25	1.25	1.55	1.00	1.45	2.00	2.00
NEW ENGLAND FERTILIZER CO., Boston, Mass.								
New England Complete Manure 4-6-10	3.28	3.41	7.00	7.60	6.00	6.32	10.00	10.19
New England Corn Phosphate 2-8-2	1.64	1.82	9.00	9.64	8.00	8.52	2.00	2.16
New England Potato and Vegetable Manure 4-8-4	3.28	3.28	9.00	9.48	8.00	8.73	4.00	4.03
New England Potato Phosphate 4-8-7	3.28	3.55	9.00	9.36	8.00	8.64	7.00	7.61
New England Superphosphate 3-8-4	2.46	2.54	9.00	9.47	8.00	8.07	4.00	4.08

	NITROGEN		PHOSPHORIC ACID				POTASH	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
PIEDMONT MT. AIRY GUANO CO., Baltimore, Md.								
Harvest Brand 2-8-2	1.65	1.49	9.00	10.36	8.00	8.30	2.00	2.07
Harvest Brand 4-8-4	3.29	3.30	9.00	9.85	8.00	8.55	4.00	4.30
Harvest Brand 5-8-7	4.12	3.93	9.00	9.36	8.00	8.42	7.00	7.19
PREMIER POULTRY MANURE CO., Chicago, Ill.								
Pulverized Poultry Manure—Premier Brand	4.93	5.19	2.75	2.58	2.50	2.45	1.30	1.94
Pulverized Sheep Manure—Premier Brand	2.00	*1.77*	1.25	*0.72*	1.00	*0.56*	2.00	2.00
PULVERIZED MANURE CO., Chicago, Ill.								
Sheep Manure—Wizard Brand	2.00	2.07	......	1.47	1.25	1.27	2.00	2.46
ROGERS AND HUBBARD CO., Portland, Conn.								
Corn and Grain Fertilizer	0.82	0.88	11.00	12.40	10.00	10.11	3.00	3.05
High Potash Fertilizer	2.46	2.46	9.00	9.00	8.00	8.11	10.00	10.00
Oats and Top Dressing	8.22	8.29	8.00	9.30	3.00	6.23	8.00	8.00
Potato Fertilizer	1.64	1.92	11.00	11.42	10.00	10.21	4.00	4.25